

**INFLUENCE OF PYRITHIOBAC, CGA 362622, AND MEPIQUAT CHLORIDE
COMBINATIONS ON NC COTTON GROWTH AND DEVELOPMENT**
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Abstract

The regulation of cotton growth (internode elongation, early fruit retention) has been accomplished for over 20 years with mepiquat chloride. Recently the addition of POST-broadcast herbicides has opened new avenues to weed control in conventional cotton. Tank mixing utilizes management strategy to increase efficiency and cost effectiveness of applications of herbicides, insecticides, and fertilizers. This principle is carried over into this study dealing with mepiquat chloride applications applied with the new broadcast herbicides pyriothobac and CGA 362622. The regulation of cotton growth by tank mixes of mepiquat chloride, pyriothobac, and CGA 362622; and the response of cotton to pyriothobac, CGA 362622, and pyriothobac + CGA 362622 relative to mepiquat chloride were established in 2002 field studies at Rocky Mount, NC, and Goldsboro, NC. The field studies were planted with D&PL 451 B/R and treatments were arranged in a randomized complete block design with 4 replications. The 12 treatments were applied at the 9-10 leaf stage and consisted of mepiquat chloride levels 0, 4, and 8 oz product a⁻¹ factored across no herbicide, pyriothobac at 1.2 oz product a⁻¹, CGA 362622 at 0.0036 lb ai a⁻¹, and pyriothobac at 0.6 oz product a⁻¹ + CGA 362622 at 0.0036 lb ai a⁻¹. Regarding the tank mix objective at Goldsboro, herbicide levels did not affect mepiquat chloride rates in terms of percent row closure 9 DAT, while mepiquat chloride rates 4 oz and 8 oz across herbicide levels exhibited 55.8% and 55.7% row closure that was greater than 0 oz mepiquat chloride at 50.9% (P = 0.0010). Mepiquat chloride rates of 4 oz and 8 oz decreased total nodes by approximately 0.8 to 1 node compared to 0 oz (P = 0.0337), while herbicide levels decreased about 0.5 nodes from no herbicide (P = 0.0075). Across both locations, 0 oz mepiquat chloride yielded 107 lb a⁻¹ more than 8 oz of mepiquat chloride (P = 0.0486). Herbicides over mepiquat chloride rates at Rocky Mount yielded more lint than no herbicide (P = 0.0097). Individual applications of untreated check, mepiquat chloride at 4 oz and 8 oz, pyriothobac, CGA 362622, and pyriothobac + CGA 362622 influenced the response of cotton at different levels. Mepiquat chloride rates of 4 oz (17.22 inches) and 8 oz (15.98 inches) were both shorter than the range of 19.4 to 20 inches of the untreated check and the three herbicide levels 14 DAT (P < 0.0001). Over both locations, mepiquat chloride 4 oz and 8 oz rates were about 1 node less than the check and pyriothobac (P = 0.0475), while CGA 362622 tended to decrease node number. Mepiquat chloride 4 oz increased earliness by 10-15% compared to the check and the herbicides (P = 0.0074). Both mepiquat chloride rates of 4 oz and 8 oz were approximately 7% greater than pyriothobac in row closure, while the other herbicide treatments and the untreated check were not different (P = 0.0461). Pyriothobac and pyriothobac + CGA 362622 yielded more than the untreated check, whereas mepiquat chloride rates of 4 oz and 8 oz and CGA 362622 were not different (P = 0.0647).